

Speaking valve with integrated biomimetic overpressure release and acoustic warning signal

Technology

The improper use of speaking valves can result in dangerous overpressure, leading to severe complications and even the patient's death. Our aim was to address this life-threatening issue by creating a biomimetic speaking valve. This innovative valve incorporates an integrated overpressure valve that automatically opens when a critical pressure threshold is reached. To enhance safety, a whistle module has been integrated to provide a loud acoustic alert for medical staff. Decades of fundamental research on *Utricularia vulgaris* served as design inspiration in an abstracted form. A comprehensive analysis of different membrane parameters enabled us to adjust the valve's opening pressure to cater to each patient's unique requirements, potentially saving lives with a trick of nature.

Innovation

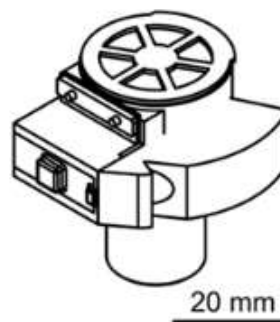
- Innovative speaking valve with overpressure valve
- Overpressure valve to avoid damaged airways
- Acoustic warning signal through notch whistle fully electronic free
- Customizable opening pressure individual for patients
 - membrane parameters can be adjusted
- speaking valve function not impaired through the addition of the overpressure valve
 - no training needed to handle the new speaking valve
- resetting of the opening valve without removal or contamination of the speaking valve

Application

- Overpressure release in speaking valve with acoustic signal for tracheostomy patients e.g. in intensive care
- Connector dimensions identical to regular speaking valves

Developmental Status

- Principle demonstrator



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Tracheostomy
Medical devices

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